AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently amended) A computer implemented method for generating hardness information of tissue subject to a varying pressure, the method comprising:

receiving signals from a tissue with a sensor for measuring the deformation of the tissue in a measuring plane defined by the sensor, where the sensor is moved, under control of an actuator, during the receiving signals step:

(a) in a direction transverse to the measuring plane, and

(b) while the tissue is subject to a varying pressure;

identifying strain of the tissue from the signals received by the sensor moved during the receiving signals step in the direction transverse to the measuring plane; and

relating the strain to at least one of either hardness or elasticity parameters of the tissue; and

wherein moving the sensor under control of the actuator, in the direction transverse to the measuring ~~pane~~plane while the tissue is subject to a varying pressure, is controlled to provide sufficient correlation between consecutive image frames generated from the signals received by the sensor to identify strain of the tissue.

2. (Previously presented) The computer implemented method according to claim 1, wherein the method comprises:

correlating signals acquired consecutively over time, where the signals are representative of the deformation of the tissue at positions of the sensor moved with respect to other positions of the sensor; and

calculating, by use of said correlating signals step, strain in a tissue surface or tissue volume part extending parallel to the direction of motion of the sensor.

3. (Previously presented) The computer implemented method according to claim 1, wherein the method comprises the step of displaying elasticity and/or hardness parameters of a tissue surface or tissue volume part.

4. (Previously presented) The computer implemented method according to claim 1, wherein the signals are echographic data detected with an acoustic sensor.

5. (Previously presented) The computer implemented method according to claim 1, wherein the signals are optical data detected with an optical sensor.

6. (Previously presented) The computer implemented method according to claim 1, wherein the method comprises displaying elasticity and/or hardness parameters of the tissue with position information of the sensor and/or the tissue.

7. (Previously presented) The computer implemented method according to claim 1, wherein the signals are received during continuous motion of the sensor.

8. (Previously presented) The computer implemented method according to claim 1, wherein signals possessing an overlap are received.

9. (Canceled).

10. (Previously presented) The computer implemented method according to claim 1, wherein signals, at an assumed cyclic pressure change, are received at predetermined time intervals in a pressure change cycle.

11. (Previously presented) The computer implemented method according to claim 1, wherein the signals come from a blood vessel wall and the data are received only during a specific time interval of the period of the heartbeat.

12. (Previously presented) The computer implemented method according to claim 1, wherein the tissue is an artery moving during the heartbeat in the longitudinal direction, and the sensor is moved parallel to the longitudinal direction, so that, during at least one detection period, the sensor has a fixed position relative to the wall of the artery.

13. (Currently amended) An apparatus for generating hardness information of tissue subject to a varying pressure, wherein the apparatus comprises:

a sensor adapted to record signals from tissue while being~~be~~ moved through a blood vessel or body cavity ~~for recording signals from a tissue~~, wherein the apparatus is adapted to control the sensor ~~is controlled~~ to acquire signals from the tissue, during a period of varying pressure exerted on the tissue, while being controllably moved in a direction transverse to a measuring plane defined by the sensor;

a processor device ~~for collecting and processing~~adapted to collect and process signals from the sensor to identify strain of the tissue and to relate the strain to elasticity and/or hardness parameters of a tissue surface or tissue volume part; and

a display device for displaying elasticity and/or hardness parameters of the tissue surface or tissue volume part; and

wherein the processor device is adapted to:

receive the signals from the sensor for measuring the deformation of the tissue in a measuring plane defined by the sensor, and where the apparatus is further adapted to move the sensor, ~~is moved~~ while the sensor is receiving signals from the tissue, under control of an actuator:

(a) in a direction transverse to the measuring plane, and

(b) while the tissue is subject to a varying pressure,

identify strain of the tissue from the signals received by the sensor moved during the receiving signals step in the direction transverse to the measuring plane, and

relate the strain to at least one of either hardness or elasticity parameters of the tissue; and

wherein the apparatus is further adapted to control moving the sensor under control of the actuator, in the direction transverse to the measuring ~~pane~~ plane while the tissue is subject to a varying pressure, ~~is controlled~~ to provide sufficient correlation between consecutive image frames generated from the signals received by the sensor to identify strain of the tissue.

14. (Previously presented) The apparatus of claim 13, wherein the apparatus comprises:

a correlation detector for detecting correlation between consecutively acquired signals, where the signals are representative of the deformation of the tissue at positions of the sensor moved with respect to other positions of the sensor;

the processor device being arranged to calculate by use of said correlation a strain in a tissue surface or tissue volume part extending parallel to the direction of motion of the sensor.

15. (Previously presented) The apparatus of claim 13, wherein the apparatus further comprises:

a position recorder coupled with the processor device to record sensor positions.

16. (Previously presented) The apparatus of claim 13, wherein the apparatus further comprises:

an actuator for controllably moving the sensor in the direction transverse to the measuring plane while the sensor acquires signals from the tissue.

17. (Original) The apparatus of claim 16, wherein the actuator has an adjustable speed of motion.

18. (Currently amended) The apparatus of claim 13, wherein the apparatus further comprises:

~~a first~~an activator for activating non-transitory data storage for storing signals.

19. (Currently amended) The apparatus of claim 13, wherein the apparatus comprises:

~~a second~~an activator for activating the actuator.

20. (Currently amended) The apparatus of claim 18, wherein the ~~first~~ activator ~~can be connected with~~is adapted to be controlled by data from an ECG recording device to become active during a predetermined part of the heartbeat.

21. (Previously presented) The apparatus of claim 18, wherein the first activator is connected with the correlation detector to become active at a predetermined correlation.

22. (Previously presented) The apparatus of claim 13, wherein the sensor is arranged in a catheter, adapted to be inserted into a blood vessel, the sensor being adapted to receive signals under controlled pullback of the catheter.

23. (Previously presented) The apparatus of claim 13, wherein the sensor is an acoustic sensor.

24. (Previously presented) The apparatus of claim 13, wherein the sensor is an optical sensor.

25. (Previously presented) The method of claim 1 wherein the sufficient correlation is provided by determining an optimum overlap between image frames by use of a probability function representing similarity between consecutive signals.

26. (Currently amended) The apparatus of claim 13 wherein the apparatus is adapted to execute a probability function representing similarity between consecutive signals ~~is executed~~ to provide the sufficient correlation by determining an optimum overlap between image frames.